

## The Effect of Population Growth on Unemployment Youth in Somalia

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### Abstract

The primary aim of this study was to investigate the impact of population growth on unemployment in Somalia. Specific objectives included examining the effects of population growth, gross domestic product, and inflation on unemployment. The research adopted an empirical research design to establish empirical connections between these variables and the unemployment rate in Somalia. The Ordinary Least Squares (OLS) technique was used to calculate numerical estimates of coefficients in the econometric equation, as it is known for its simplicity and possession of the Best Linear Unbiased Estimator (BLUE) properties. The conduct the research, annual time-series data from the World Bank database and International Monetary Fund for the period 1985-2019 were utilized. The relationships between the independent variables (population growth, gross domestic product, and inflation) and the dependent variable (unemployment) were established using Ordinary Least-Squares (OLS) regression. The economic software EVIEWS was employed to estimate the values of the impact of population growth on unemployment. The findings of the study indicated that the inflation coefficient suggested that a \$1 increase in inflation led to a 53% increase in unemployment. Additionally, all other variables showed a positive relationship with unemployment. Thus, the null hypothesis was accepted, signifying that inflation has a significant influence on unemployment.

**Keywords:** Population Growth, Unemployment, Somalia, Youth, Inflation

### Introduction

Two centuries ago, the global population numbered less than one billion. However, in the 20th century, the world witnessed an unprecedented surge in population growth (Leeson, 2018). The increase from 1.5 to 6.1 billion within just 100 years far surpassed any previous historical growth. The peak growth rate of 2.1% in 1962 indicated a remarkably rapid expansion, although it has since slowed to approximately half (Woetzel et al., 2018).

Presently, the global population stands at over 7 billion people, with estimates suggesting that about 6.5% of all individuals ever born constitute the current world population (Hong et al., 2019).

Sub-Saharan African nations, including Somalia, face significant challenges in dealing with unemployment (Kamga et al., 2022). The acceleration of population growth is a concern, as an uncontrolled increase in population could lead to further unemployment issues (Group, 2018). The relationship between Somalia's population growth and its unemployment rate remains uncertain. Unemployment has become a persistent problem in both developed and developing countries where the inability of individuals to find suitable employment despite possessing the required skills and knowledge is a common issue. According to Keynesian economics, unemployment occurs when market demand for goods and services falls that affects the population growth and unemployment proportionately to economic development.

In the African region, countries with life expectancies below 50 years have experienced rapid population growth, contributing to the phenomenon known as the "youth bulge." More than half of the population in some African nations is under the age of 25. Africa's population has seen a significant increase, reaching 1.2 billion in 2016 from 221 million in 1950 (Sahoo & Sahoo, 2019). Projections indicate that by 2050, the population may rise to 2.5 billion, representing about 26% of the world's total, and possibly reaching 4.4 billion by 2100, accounting for about 39% of the global population (Bennett, 2019).

Somalia, with a population of approximately 15.18 million in 2018, is experiencing rapid expansion driven by a high fertility rate of 6.26 children per woman, one of the world's highest. The country's population increases by almost 3% annually (Alin & Said, 2018). Urban centers like Mogadishu and Hargeisa have populations of over a million each, but unemployment, particularly among the youth, remains a significant challenge. Youth migration is prevalent, and the youth unemployment rate in Somalia was as high as 75% in 2014 which exceeds the national average significantly (Wirtz et al., 2018).

This paper aims to investigate the relationship between population growth and unemployment in Somalia with a particular focus on the youth. As the country faces persistent instability, unemployment, and weak public institutions, the impact of population growth on the labor market is crucial to understand. By examining the demographic transition theory and the Classical Theory of Unemployment, this study seeks to shed light on the factors contributing to high youth unemployment rates and propose potential solutions for Somalia's future development. Ultimately, addressing the youth unemployment challenge is imperative for promoting stability and prosperity in this nation striving for recovery and growth.

### **Methodology**

The main approach used in this study is the Vector Error Correction Model (VECM). The selection of this design was based on the fact that all variables involved in the research are integrated in the short-run relationship. The VECM is a statistical method commonly used to analyze the relationship between multiple time series variables when they are integrated (meaning they have a stochastic trend) and cointegrated (meaning there is a long-term equilibrium relationship among them).

### **Unit Root Test**

The researchers performed stationary tests on the variables before estimating the equation to prevent potential issues with spurious regression. The objective of these tests was to determine whether the time series data exhibited stationarity or non-stationarity. If the data series, after being differenced, was found to be stationary, it could be integrated to the order of one or greater. However, if the differenced series remained non-stationary, it indicated the presence of a non-stationary series.

To evaluate the presence of unit roots in the data, the researchers utilized the Augmented Dickey-Fuller and Phillips-Perron tests. These tests are designed to test the null hypothesis of non-stationarity. If the null hypothesis cannot be rejected, indicating non-stationarity, appropriate differencing would be required to induce stationarity for further analysis. Conversely, if the null hypothesis is rejected, implying stationarity, differencing may not be necessary. By conducting these tests, the researchers ensured that the time series data used in the analysis was stationary which may avoid the problem of spurious regression and enhancing the reliability of their results.

### **Model Specifications**

In this study, the researchers propose a mathematical specification to examine the effect of population growth, gross domestic product (GDP), and inflation on unemployment in Somalia. The relationship is expressed as follows

$$\text{UNEM} = f(\text{Pop}, \text{GDP}, \text{INFL}) \dots (1)$$

Where: UNEM = Unemployment POP = Population growth GDP = Gross domestic product INFL = Inflation  $\mu$  = Error term

The equation can be further represented in a linear form as

$$\text{UNEM} = \beta_1 + \beta_2 * \text{POPt} + \beta_3 * \text{GDPT} + \beta_4 * \text{INFLt} + \mu \dots (2)$$

- UNEM represents the unemployment rate at a specific time point.
- POPt represents the population growth at that time point.
- GDPT represents the gross domestic product at that time point.
- INFLt represents the inflation rate at that time point.
- $\beta_1$  is the intercept, representing the baseline unemployment rate when all other variables are zero.
- $\beta_2$ ,  $\beta_3$ , and  $\beta_4$  are the coefficients or slopes that measure the impact of population growth, GDP, and inflation on the unemployment rate, respectively.

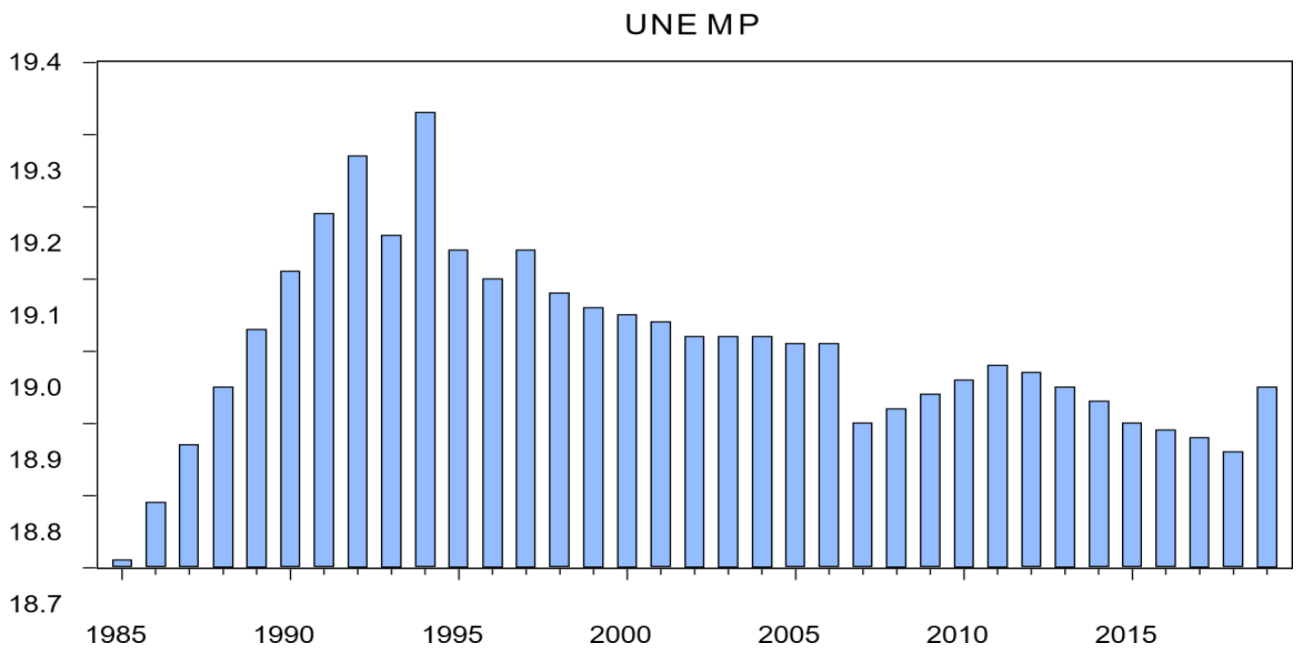


Figure 2 UNEMPLOYMENT

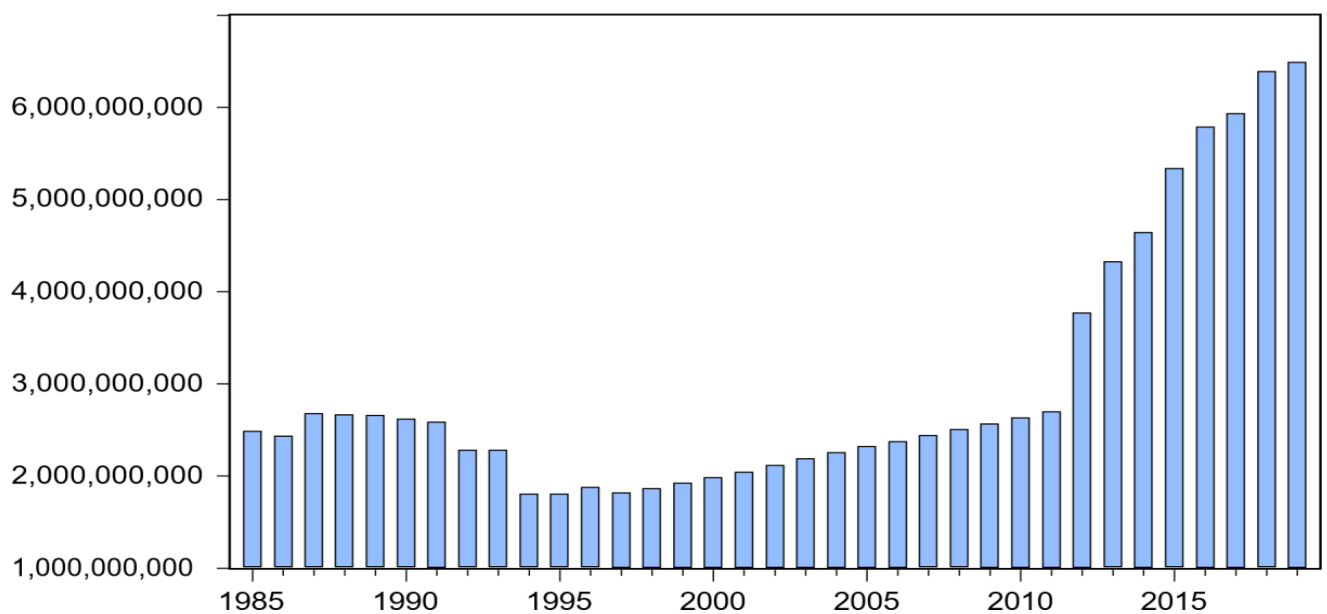


Figure 1 Gross Domestic Product

**Result**

As indicated by the figures above, the unemployment rate in Somalia remained relatively stable in the years preceding 1986, which was before the state's collapse. However, from 1990 onward, the unemployment rate started to rise in a fluctuating manner. By the year 2010, the unemployment rate in Somalia reached its peak at 19.4%. Similarly, the Gross Domestic Product (GDP) of Somalia showed stability before the state's collapse in the years leading up to 1990. However, from 1990, the GDP began to decline, and by the year 2010, it had decreased significantly to approximately 7 billion. Furthermore, the figure above illustrates the variations in Somali inflation from 1985 to 2010. Starting from 1985, inflation witnessed a decline until 1987, after which it started to rise steadily from 1990 to 2005. This

increase in inflation was a result of the revival of the Somali economy as the country's conditions began to improve.

### **Model Cointegration**

Based on the results presented in Table 4.5, the researchers conducted a joint-run test to determine if there is a long-run relationship among the variables in the study. The test was performed on the first-differenced series, which were found to be stationary at the 1st difference. The test considered the variables UNEMP, POP, GDP, and INFL, and it examined whether there are cointegrating equations among these variables. The researchers used both the Maximum Eigenvalue (Max) and the Trace test statistics to assess cointegration. The null hypothesis of the test is that there are no long run cointegrating equations among the variables.

The results indicated that neither the Max nor the Trace test statistics showed evidence of cointegrating equations at the 5% significance level. However, the p-values associated with these test statistics were less than 0.05, leading to the rejection of the null hypothesis. This implies that there is a long-run relationship between the variables UNEMP, POP, GDP, and INFL, despite the absence of cointegrating equations according to the Max and Trace tests.

In conclusion, the cointegration test results suggest that there is a long-run relationship between the variables under investigation, even though none of the individual variables showed cointegrating equations according to the Max and Trace tests. This finding is crucial for understanding the dynamics and interdependencies among the variables over an extended period.

### **Discussion**

Based on the analysis conducted using E-views statistical software version 9 on the annual time-series data from 1985 to 2019, the researchers developed a regression model with the unemployment rate (unemp) as the regress and population growth (pop), gross domestic product (GDP), and inflation (INFL) as the regressors. The results of the Augmented Dickey Fuller (ADF) test showed that all variables were not stationary at the level but became stationary at the 1st and 2nd difference, indicating that they are integrated and suitable for the analysis. The best-fitted model was identified, with a high Adjusted-R<sup>2</sup> of approximately 85%. All explanatory variables showed positive coefficients whereby an increase in population growth, GDP, and inflation was associated with an increase in the unemployment rate.

Furthermore, diagnostic tests were conducted to assess the model's performance. The results showed no evidence of serial correlation or multicollinearity problems. The residuals were found to be normally distributed, and the overall model was deemed good and fit. The variance inflation factor (VIF) analysis confirmed that the independent variables were significant and free from multicollinearity issues. The Breusch-Godfrey test indicated that the residuals were homoscedastic which provides further support for the model's validity. To test for cointegration, the researchers employed the Johansen cointegration test in the Vector Error Correction Model (VECM). The test revealed that the model had two cointegrated equations which indicates a long-run relationship between the variables.

In interpreting the VECM long-run equation, it was concluded that a \$1 increase in GDP led to a 1.5% increase in the unemployment rate while all other variables also had a positive

relationship with unemployment. Similarly, the short-run equation revealed that a \$1 increase in inflation led to a certain effect on the unemployment rate which is not specified in the provided information. Overall, the study found evidence of a long-run relationship between the variables and provided insights into the impact of population growth, GDP, and inflation on unemployment in Somalia. The overall model demonstrated a good fit with the data and supported the researcher's hypotheses.

### **Conclusion**

The study focused on examining the effect of population growth, GDP, and inflation on unemployment in Somalia using secondary data from World Development Indicators spanning 34 years from 1985 to 2019. The independent variables were population growth, GDP, and inflation, while unemployment served as the dependent variable. Regression analysis, specifically OLS estimator, was utilized to estimate model parameters and determine the relationships between the variables.

Unit root tests (ADF tests) were conducted to assess stationarity, and the results showed that all variables became stationary after the first difference. Co-integration tests (Johansen's procedure and Engle-Granger) were employed to ascertain the presence of long-run relationships between unemployment and the independent variables. Error correction method and Granger-causality tests were also conducted along with the Breusch-Pagan-Godfrey Heteroskedasticity test and the Breusch-Godfrey Serial Correlation test to validate the appropriateness of the estimations and avoid spurious regression.

The analysis revealed that population growth had a significant positive impact on unemployment in the long run, with an increase of 1 unit in population growth leading to a 4.96 unit increase in unemployment. Similarly, inflation showed a positive relationship with unemployment with a 1 unit increase in inflation leading to a 0.16 unit increase in unemployment. However, GDP was not found to have a significant impact on unemployment. The model's R-square value of 0.85 indicated a good fit, implying that the model was well-fitted to the regression line and the data. The probability of F-statistics indicated that both independent variables, population growth, and inflation were significant as their jointly calculated P-value was less than 5%.

Furthermore, the study employed Johansen co-integration test in the VECM to investigate the existence of long run cointegration relationships. The test revealed two cointegrated equations, indicating a long-run relationship between the variables. Interpreting the VECM long-run equation, it was concluded that a \$1 increase in GDP led to a 1.5% increase in unemployment, and all other variables also had a positive relationship with unemployment. Similarly, interpreting the VECM short-run equation, a \$1 decrease in inflation led to a 0.20% increase in unemployment, while all other variables showed a positive relationship with unemployment.

### **Recommendation**

Based on the study's findings and conclusions, there are several key recommendations to address unemployment and population growth in Somalia. First and foremost, the government should prioritize Population Control Education, investing in campaigns to educate the public on birth control measures like child spacing, which can help manage population growth and its impact on unemployment. Moreover, focus should be placed on



supporting the private sector particularly in the establishment of manufacturing companies that can provide employment for the youth. Along with this, skills training can make these jobs more accessible.

Align with this, there's a need to foster an environment that encourages entrepreneurship. The establishment of market centers and trade shows can help budding entrepreneurs and traders start small and medium-sized enterprises (SMEs) to create self-employment opportunities. Meanwhile, a well-coordinated approach to fiscal and monetary policies is crucial for the efficient use of resources which can trigger economic growth and consequently reduce unemployment. Thus, the government should consider upping its investment to create broader employment opportunities for its unemployed population where there is a need to align the job training and entrepreneurship programs with industry needs. Finally, efforts should be made to empower women through education and employment opportunities. An educated and employed female population can better understand and help manage the implications of population growth.

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